ADAM®

Adam Equipment

PW & PGW(e, I, M) SERIES

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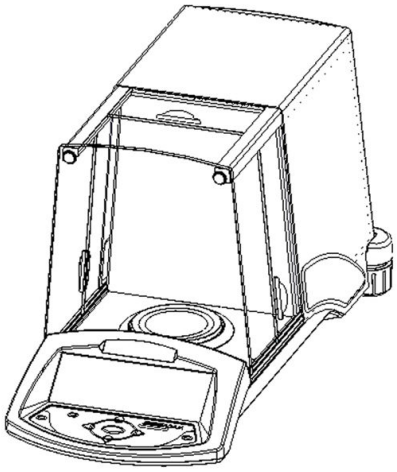

Adam Equipment strives to be more environmentally focused and uses recycled materials and environmentally friendly packaging where possible. As part of this initiative we have developed a short manual that uses less paper and ink to describe the main functions of your new Adam balance. A complete version is available at www.adamequipment.com. Thank you for your support of Adam Equipment and we hope that you enjoy your new balance.

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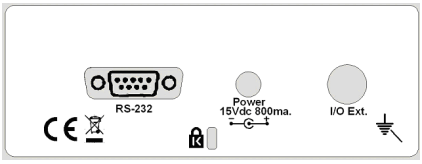
1.0 OPERATION

1.1 TURNING ON THE BALANCE FOR THE FIRST TIME

For the first time, you should assemble the balance as follows:

Set your balance on a solid surface, free from vibration. Tilt the balance on its side and remove the two shipping screws and nuts before use (only on the internal calibration models). If you need to ship the balance, replace the screws.
For PW models: Open the sliding door and gently place the square base plate, the locating disc, weighing platform, the guard ring and then the stainless steel top. Level it by using the spirit level.
For PGW models: Gently place the 4 pan supports (if not already fitted) and then the stainless steel pan on the weighing platform. Place the draught shield frame and the top cover around the pan (for mg models only)



Attach the power supply cable to the connector on the rear of the balance. The display will show the serial number and software revision before starting its self test sequence. The display will show zero weight accompanied by the →0← symbol. There is a power button on the front that turns the screen off and sets the balance into standby mode

It is a good idea to let the balance achieve a stable internal temperature before use – normally 30-60 min warm up time is advisable.

A stable sign ~ is shown when the balance is in stable condition. It will turn off if the balance is not stable. Exact zero is shown when the "→0← "symbol is on to the left of the display area.

NOTE: If a passcode has been set to limit access to the weighing functions the display will show **"PASSCODES"**. The display will change to show 7 digits set to zero with the rightmost digit flashing. Use the numeric entry method (see section 1.2) to enter the secure code. See menu structure to see how to set the security code.

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1.2 NUMERIC ENTRY METHOD

To set a value when required, use the keys as given below-

- **[Up]** and **[Down]** keys to increase or decrease the flashing digit,
- **[Advance]** and **[Back]** keys to advance or move back the digit and
- **[Enter]** key to accept the value

1.3 WEIGHING

If required, press **[→0/T←]** to zero the balance. Then place a mass on the pan and the weight will be displayed.

If a container is used, press **[→0/T←]** to tare the balance. **" Net"** will be displayed to indicate that the balance is tared.

When the display shows zero, place the item to be weighed. Only the net weight will be displayed.

NOTE: At any time the **[Unit]** key can be pressed to select another unit. Use the **[Up]** or **[Down]** key to scroll through the units and select the desired unit by pressing the **[Enter]** key. The available weighing units can be enabled or disabled by the user. (See section7.0)

1.4 WEIGHING UNITS

You can select alternative weighing units to display the weight by pressing the **[Unit]** key. There are 9 weighing units available in the balance, including one custom unit.

unit	Symbol	unit	symbol
GRAMS	g	DRAMS	dr
MILLIGRAMS	mg	HK TAELS	tl H
KILOGRAMS	kg	TAIWAN TAELS	tl T
CARATS	ct	SING TAELS	tl S
PENNYWEIGHTS	dwt	MOMMES	mm
GRAINS	GN	TOLAS	T
TROY OUNCES	ozt	TICAL	ti
OUNCES	oz	NEWTONS	N
POUNDS	lb	CUSTOM	Custom

If **"CUSTOM"** unit is selected, the balance will prompt for entering a multiplier by displaying **"MULTIPLIER XX,XXX"**, where **"XX,XXX"** is the last stored value. Any value ranging from 0.100 to 10.000 may be entered, by which the weight in grams will be multiplied before being displayed. If a multiplier of greater than 1.000 is entered, the number of decimal places displayed will be reduced by one. This multiplier value will be saved for the next use till it is changed by the user.

PGW..M series balances have only grams, milligrams, kilograms and caret units,

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2.0 FUNCTIONS

When weighing, the user can access the applications that have been enabled weighing. The selectable functions can be enabled using a similar method to the Units above by turning the functions on or off.（See section 7.0 menu structure）

2.1 PARTS COUNTING

This allows the user to weigh a sample of parts to compute an average unit weight and then determine the number of items being weighed by dividing the net weight by the unit weight value. The result is always a whole number of parts.

Steps:

1) Press **[Mode]** and then the **[Up]** or **[Down]** key to select parts counting. **"PARTS"** will be displayed

2) Press **[Enter]** to enter in.

3) Press the **[Up]** or **[Down]** key to select the sample size, **"REF QTY"**, 10, 25, 50, 100, etc., then press **[Enter]** to confirm.

4) When **"LOAD XX Pcs"** is shown place XX number of items on the pan and press **[Enter]** to compute the average piece weight. Display will indicate the busy symbol.

5) Remove the sample when display shows **"XX Pcs"** and then place an unknown quantity on the pan. The balance will then compute the number of parts based upon the average piece weight. The display will show the result in Pcs.

6) To count another item press **[Mode]** and continue from step 2. To return to normal weighing, press **[Esc].**

NOTE: During parts counting checks will be made to determine that the weight of the reference parts is large enough for reasonably accurate counting (weight of each piece should be > 1d)

2.2 PERCENT WEIGHING

Percent weighing will be done by defining a certain weight to be 100%. The weight to be used can either be entered by the user or taken from a sample.

Steps:

1) Press **[Mode]** and then the **[Up]** or **[Down]** key to select percent weighing. **"PERCENT"** will display.

2) Press **[Enter]** to enter the function.

3) Display will show **"PERCENT SAMPLE".** Press **[Enter]** to select the sample method (see step 4) or press the **[Up]** or **[Down]** key to select the manual entry of weight method (see step 7).

--Sample method—

4) When **"LOAD 100 %"** is shown, add the sample, Press **[Enter]** to set this weight to be 100%, When ready the display will show **"100%"**

5) Remove the sample and place an unknown sample to display the percentage weight

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6) To set another weight as 100%, press **[Mode]** and continue from step 2 above.

--Manual entry—

7) To manually enter a value to be set as 100%, when **"PERCENT SAMPLE"** is shown to select **"PERCENT Ent Wt"** by press the **[Enter]** key.

8) Enter the weight using the numeric entry method (See section 1.2). Place unknown sample to display the percentage weight

9) To perform percent weighing with another sample press **[Mode]** and continue from step 2 above.

10) To return to normal weighing, press **[Esc]**.

2.3 CHECK WEIGHING

During weighing of a sample the balance can be set to show if the weight is above or below an upper and a lower limit. The arrows and bars between the arrows will indicate when the weight is below the lower limit, between the limits or above the upper limit.

The buzzer can be set to be active when the weight is outside the limits or within the limits, or turned off. If desired, only one limit needs to be set. If only one limit is set the other limit is considered to be zero (lower) or the maximum (upper).

Steps:

1) Press **[Mode]** and then the **[Up]** or **[Down]** key to select Check Weighing. When **"CHECK"** is displayed press the **[Enter]** key to enter in.

2) Press **[Up]** or **[Down]** to set the **"LOW LIMIT"** to **"On"** or **"OFF"**

3) Press **[Enter]** to proceed. If the **"LOW LIMIT"** was set to **"On"** the display will show the current low limit and allow you to change the limit using the numeric entry method (section 1.2). Press **[Enter]** to proceed

4) If the **"LOW LIMIT"** was set to **"OFF"** or the setting of the low limit is complete, then the display will change to **"HIGH LIMIT"**. Use **[Up]** or **[Down]** to set the **"HIGH LIMIT"** to "On" or "OFF" Press **[Enter]** to proceed

5) If the "HIGH LIMIT" was set to "On", the display will show the current high limit which can be changed by using the numeric entry method .Press **[Enter]** to proceed

6) Next the beeper setting is displayed. Press **[Up]** or **[Down]** to scroll through the options –

7) **"BUZZER OFF"** (Beeper set to off at all times)

8) **"BUZZER In"** (Beeper will sound when the weight on the pan is within the limit) or

9) **"BUZZER Out"** (Beeper will sound when the weight on the pan is outside the set limits)

10) Confirm the beeper setting by pressing **[Enter]**

11) Press **[Enter]** again to start the Check Weighing

12) When a weight is placed on the pan now, the display will indicate whether the weight is below the LOW LIMIT between the LOW and HIGH LIMITS or higher than the HIGH LIMIT using the capacity tracker

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13) To perform check weighing with another sample press **[Mode]** and continue as before. To return to normal weighing, press **[[Esc]**.

NOTE: The Check weighing is not active from zero to 20 scale divisions however the arrows will still be turned on below the fill guide and the weight will still be displayed.

2.4 ANIMAL / DYNAMIC WEIGHING

The balance can be set to weigh animals or moving items. The actual weighing process can begin either automatically when the weight is placed on the pan or when initiated by the operator. The weighing unit can be selected as normal using the **[Unit]** and **[Enter]** keys, before entering the Animal / Dynamic Weighing process.

Steps:

1) Press **[Mode]** and then the **[Up]** or **[Down]** key to select Animal / Dynamic Weighing. When **"ANIMAL"** is displayed press **[Enter]** to enter Animal Weighing mode

2) Press **[Up]** or **[Down]** to select **"rUN"** for starting the animal / dynamic weighing using the method previously set or **"SEtUP"** to set up the balance for animal weighing (see the section 2.4.1 Animal Weighing Setup Parameters)

—Manual mode—

1) If **[Enter]** is pressed when **"rUN"** is selected, balance will display **"START ?"**
2) Place the item on the pan and press **[Enter]** again
3) The result will be displayed by showing **"FINISHED xx.xx x"** after a pre-set time Delay and Sampling period (see the section3.4.1 Animal Weighing Setup Parameters)

—Auto mode—

1) If **[Enter]** is pressed when **"rUN"** is selected, balance will display **"LOAD PAN"**
2) Place the item on the pan. The animal weighing test will begin automatically
3) After the configured Delay and test time are computed by the balance, the result will be shown displaying **"FINISHED xx.xx x"**

3) During animal weighing if the **[Print]** key is pressed, the balance will display **"PAUSED"** and show the current average. To resume, press **[Print]** again or press **[Mode]** will display **"STOPPED"** and terminate the weighing

4) To weigh another item Press **[Mode]** or **[Esc]** to return to normal weighing

2.4.1 Animal Weighing Setup Parameters

1) Use the same method to enter the Animal function. Press the **[Up]** or **[Down]** key to select **"rUN"** or **"SEtUP"** Press **[Enter]** to select **"SEtUP"** to set up the balance for animal weighing

2) Use the **[Up]** or **[Down]** key to scroll through the options for setting up the mode. The display will show **"MODE AUTO"** or **"MODE MANUAL".**

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If **"AUTO"** is selected-

Threshold (During AUTO mode only)

1) The display will next show **"THRESHOLD XX g"** where XX is the minimum weight of the item required by the balance to start the process for animal weighing.
2) The XX can be changed from 1 to 99 using the numeric entry method .To confirm the desired value, press **[Enter]**

Test time

3) After **[Enter]** is pressed to select **"MODE MANUAL"** or **"MODE AUTO"**, it will display **"TEST TIME XX"**, where XX is the number of seconds over which the balance will average to compute the final weight as set during last operation

4) The XX can be changed from 1-200 using the numeric entry method (see section 1.2)To confirm the desired value, press **[Enter]**

Delay

5) Next, the display will show **"DELAY XX"** where XX is the time in seconds taken by the balance before the sampling starts

6) The XX can be changed from 0-200 using the numeric entry method (see section 1.2) .To confirm the desired value, press **[Enter]**

2.5 NET/TOTAL

This function allows the user to see the total of all the net weights, The **[Tare]** key functions the same way as in the normal weighing.

Steps:

1) Press **[Mode]** and then **[Up]** or **[Down]** to select Net/Total. When **"NET/TOT"** is displayed press **[Enter]** to enter the function.

2) Place the first item. The net weight will be displayed in the main display and the smaller digits will still display zeros which is show the total weight.

3) Press **[Enter]**. The main display will show zeros and the smaller digits will show the first net weight as total net weight

4) Place a second item on the pan without removing the first one. The main display will show the weight of the second item(current weight) and pressing **[Enter]** will make it show zeros and the smaller digits to show the total of both the items

5) Continue until all the items are added to the pan. When finished press **[Mode]** to transfer the total of the net weights to the main display

6) Pressing **[Print]** will print a report containing individual net weights followed by the final net weight total.

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2.6 DENSITY DETERMINATION

It is possible to determine the density of solids or liquids using this mode. The density mode allows the user to use a special Density Kit or use the below pan weighing facility to perform the necessary weighing.

DENSITY OF SOLIDS

To perform the density of solids test, the user must have a method to immerse the sample in the chosen liquid. The density of the liquid must be known or determined from a look-up table. For water and ethanol the density will be calculated based on the temperatures

Steps:

1) Press **[Mode]** and then **[Up]** and **[Down]** keys to select density, Press **[Enter]** to enter Density mode.

2) Press the **[Up]** and **[Down]** keys to select the solids or Liquid method when **"DENSITY SOLId"** or **"DENSITY LIqUId"** is displayed. Press **[Enter]** to select the solids method

3) Press **[Up]** or **[Down]** to select the liquid of choice- Water, Ethanol or Other

4) Press **[Enter]** to select the choice. For water and Ethanol the temperature will be asked for. Enter the temperature using the numeric entry method (see section 1.2) .For the **"Other"** choice the density will be asked for. Enter the density (g/cc) using the numeric entry method .Press **[Enter]** to continue

5) The balance will request the weight of the sample in air by displaying **"AIR WT"**. Place the item on the pan or receptacle, if the density kit is used. Press **[Enter]** to determine the value.

6) After completion of the air weighing, the balance will request the weight in liquid by displaying **"LIQUID WT"**. Submerge the item in the liquid and press **[Enter]** to start the liquid weighing. The balance will compute the density of the sample and display it as **"DENSITY XXXX g/cc"**

7) After completion of the liquid weighing, remove the item from the pan.

8) Press **[Mode]** to continue with a new sample or press **[Esc]** to return to normal weighing

DENSITY OF LIQUID

When finding the density of a liquid, it is necessary to weigh a sample of known volume in air and then in the liquid. The volume of the sample must be entered by the user. The last known volume is stored for use at any time. If using the density determination kit, the volume of the plumb is marked on its support, i.e. 10.123

Steps:

1) When **"DENSITY LIqUId"** is displayed, press **[Enter]** to enter the liquids method

2) The volume will be asked for. Enter the volume using the numeric entry method or continue using the last volume entered. Press **[Enter]** to continue.

3) The balance will request the weight in air by displaying **"AIR WEIGHT"**. Place the glass plumb supplied with the density determination kit in air on the weighing pan and press **[Enter]** to start the air weighing

4) On completion of the air weighing, the balance will request the weight in liquid by displaying **"LIQUID WT"**. Submerge the glass disk in the liquid and press the **[Enter]** key. The balance will compute the density of the liquid and display it. Remove the item from the pan.

5) Press **[Mode]** to continue with a new sample or press **[Esc]** to return to normal weighing.

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3.0 CALIBRATION

The PW PGW XXXi series can only be calibrated using either an internal mass (default method) or an external mass (if setup by the user). The PGW XXXe series can only be calibrated with an external mass. See the User Parameters section.

PGW..M series cannot be calibrated with an external mass. Only internal calibration is available.

3.1 MANUAL CALIBRATION

Pressing the **[Cal]** key will start calibration. Calibration can also be initiated by a change in internal temperature or a set time period as determined by the user (see section 7.0).

Calibration using Internal Calibration mass

Check the display is at zero. Tare if necessary. Calibration will begin automatically. When calibration is complete the balance will return to weighing.

Calibration using External Calibration mass

1) Press the **[Cal]** key. The display will show the balance setting a new Zero condition by showing **"LOAD 0".** Make sure the pan is empty then press the **[Enter]** key to continue

2) The balance will then show the value of the calibration mass required sounding a beep, for example **"LOAD 100.000 g"** where 100g is the default calibration mass. Using numeric entry method the user may alter the displayed value to any value ranging from one-third to full capacity of the balance.

3) Place the selected mass on the balance. Press **[Enter]** to continue

4) The display will show the busy symbol and after calibration is complete it will display **"UNLOAD"** sounding a beep. Remove the weight. Another beep will be heard confirming the unloading action. The balance will then return to normal weighing.

5) Pressing **[Esc]** will abort the calibration at any time

3.2 AUTOMATIC CALIBRATION

The balance will have the ability to calibrate (or ask for calibration) when the balance has automatic calibration enabled and the conditions of the automatic calibration have been met.

Conditions that will cause an automatic calibration are:

1. Internal temperature change greater than a preset amount, typically 0.5ºC for the Analytical balances.

2. Time since last calibration exceeds a preset time, typically 4 hours or 15 minutes after power is applied.

For the PGW..M series the Auto Calibration feature can not be disabled or changed by the user. The balance performs automatic calibration when any of the following conditions have been met:

3. 5 minutes after power is applied to the balance
4. Internal temperature changes by ±2ºC
5. Time since last calibration exceeds 4 hours

After the self-test on the first power on, the balance will display "WARM UP" and countdown from 300 seconds before performing the automatic calibration. Subsequently, it will calibrate automatically whenever

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there is a change in internal temperature by 2°C or after every 4 hours. The balance should be at a stable zero. The user knows a calibration is asked for by the flashing of the "CAL" symbol on the display. Pressing **[Esc]** during this time will postpone the calibration by 1 minute to allow the weighing in progress to be completed.

3.3 CALIBRATION ERRORS

Occasionally during calibration an error will be detected. These errors can be caused by:

Unstable readings
Improper calibration weights being used
Large shifts of zero from the factory settings

When an error is found a displayed message will be shown and the calibration must be done again. If the balance has error messages more than once it is possible the mechanics have been damaged.

4.0 RS-232 INTERFACE

The balances have the ability to send or receive data over the serial interface.
The RS-232 interface is a simple 3 wire connection.
Connector: 9 pin D-sub miniature plug

Pin	Type	
Pin 2	Input to balance	RXD
Pin 3	Output from balance	TXD
Pin 5	Signal ground	GND

Handshaking is not applied.
Baud rate:2400, 4800, 9600, 19200, 38400
Parity: NONE (=8N1), EVEN (=8E1) or ODD (=8 O 1)
All lines are terminated with carriage return and line feed (<CR><LF>).
In continuous output mode, the serial output format will be a single line in the form "12.567 g<CR><LF>".

For the PGW..M series the weight values on the display and the RS-232 output are marked with brackets on the least significant digit. For example-

NET 123.4[5] g

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5.0 ERROR CHECKING

During weighing the balance is constantly checking to see if the balance is operating within limited parameters. During weighing the errors likely to occur are:

A/D counts below lowest allowed value
A/D counts above highest allowed value
A/D not operating
Maximum capacity exceeded

Other errors may be detected during special functions or operations. These will be described in the section that applies.

Error messages and the reason for them are:

Concerning A/D counts	
ERROR ADc UL	A/D counts below a limit
ERROR ADc OL	A/D counts above a preset limit
Concerning calibration	
ERROR StAb	Calibration could not be completed because the results were not stable
ERROR LO or ERROR HI	Calibration constant not within 20% of old calibration constant
Concerning weighing	
ERROR LO	Weight display is below zero by >4%max
ERROR LOAd	Weight is above maximum plus 90d

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6.0 SPECIFICATION

PW Models:

Model	PW 124	PW 184	PW 214	PW 254
Maximum Capacity	120g	180g	210g	250g
Readability	0.0001g			
Tare Range	Full			
Repeatability (S.D.)	0.00015g	0.0002g		
Linearity (±)	0.0002g			
Units of measure	grams, milligrams, carats, ounces, pounds, troy ounce, grains, pennyweights, drams, taels (Hong Kong, Taiwan and Singapore), mommes, tolas, ticals and newtons			
Interface	RS-232 bi-directional			
Operating temperature	+ 10℃ to 40℃			
Power supply	Output voltage 15 VDC, 800 mA through External Power Supply Module- supplied as standard (Input Voltage 100–240 V, 50/60 Hz)			
Calibration	Calibration with internal mass. Alternatively the user can chose to calibrate using an external mass			
External Calibration mass	100 g			
Display	Backlit LCD with dual digits (24 mm high) and capacity tracker			
Draught shield	Supplied as standard (factory fitted)			
Draught shield dimensions	202 x 524 x 275 mm			
Housing	Die cast aluminium housing with glass weighing chamber			
Pan size	90 mm ø			
Overall dimensions (wxdxh)	265 x 524 x 275 mm			
Net weight	12 kg			
Applications	Weighing, Check weighing, Percentage weighing, Parts counting, Animal / dynamic weighing, Net / total and Density determination			

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PGW Models:

Model*	PGW 153e	PGW 253e	PGW 453e	PGW 753e	PGW 1502e	PGW 2502e	PGW 3502e	PGW 4502e
Maximum capacity	150g	250g	450g	750g	1500g	2500g	3500g	4500g
Readability	0.001g				0.01g			
Tare range	Full							
Repeatability (S.D.)	0.001g				0.01g			
Linearity (±)	0.002g				0.02g			
Units of measure	grams, milligrams (for 0.001g units only), kilograms, carats, pennyweights, grains, troy ounce, ounces, pounds, drams, taels (Hong Kong, Taiwan and Singapore), mommes, tolas, ticals, Newtons and Custom							
Interface	RS-232 bi-directional							
Operating temperature	10℃ - 40℃							
Calibration	Internal or External, Selectable Automatic Calibration due to change in time or temperature							
External calibration mass	100 g	200 g		500 g	1000 g	2000 g		

Model	PGW 153M	PGW 253M	PGW 453M	PGW 753M	PGW 1502M	PGW 2502M	PGW 3502M	PGW 4502M
Maximum capacity	150g	250g	450g	750g	1500g	2500g	3500g	4500g
e =	0.01g				0.1g			
Readability d=	0.001g				0.01g			
Tare range	Full							
Class	Ⅱ							
Units of measure	grams, milligrams (for 0.001g units only), kilograms, carats							
Interface	RS-232 bi-directional							
Operating temperature	15℃ - 35℃							
Common Specifications								
Power supply	Output voltage 15 VDC, 800 mA through External Power Supply Module- supplied as standard (Input Voltage 100–240 V, 50/60 Hz)							
Display	Backlit LCD with dual digits (24 mm high) and capacity tracker							
Draught shield	Supplied as standard				Not applicable			
Housing	Die cast aluminium housing (glass weighing chamber for models with 1mg readability)							
Pan size	140×140mm				192×192mm			
Overall dimensions (w x d x h)	251 × 358 × 104 mm							
Net weight	5.5 kg							
Applications	Weighing, Check weighing, Percentage weighing, Parts counting, Animal / dynamic weighing, Net / total and Density determination							

The same models are available with motorised internal calibration as series denoted with 'i'

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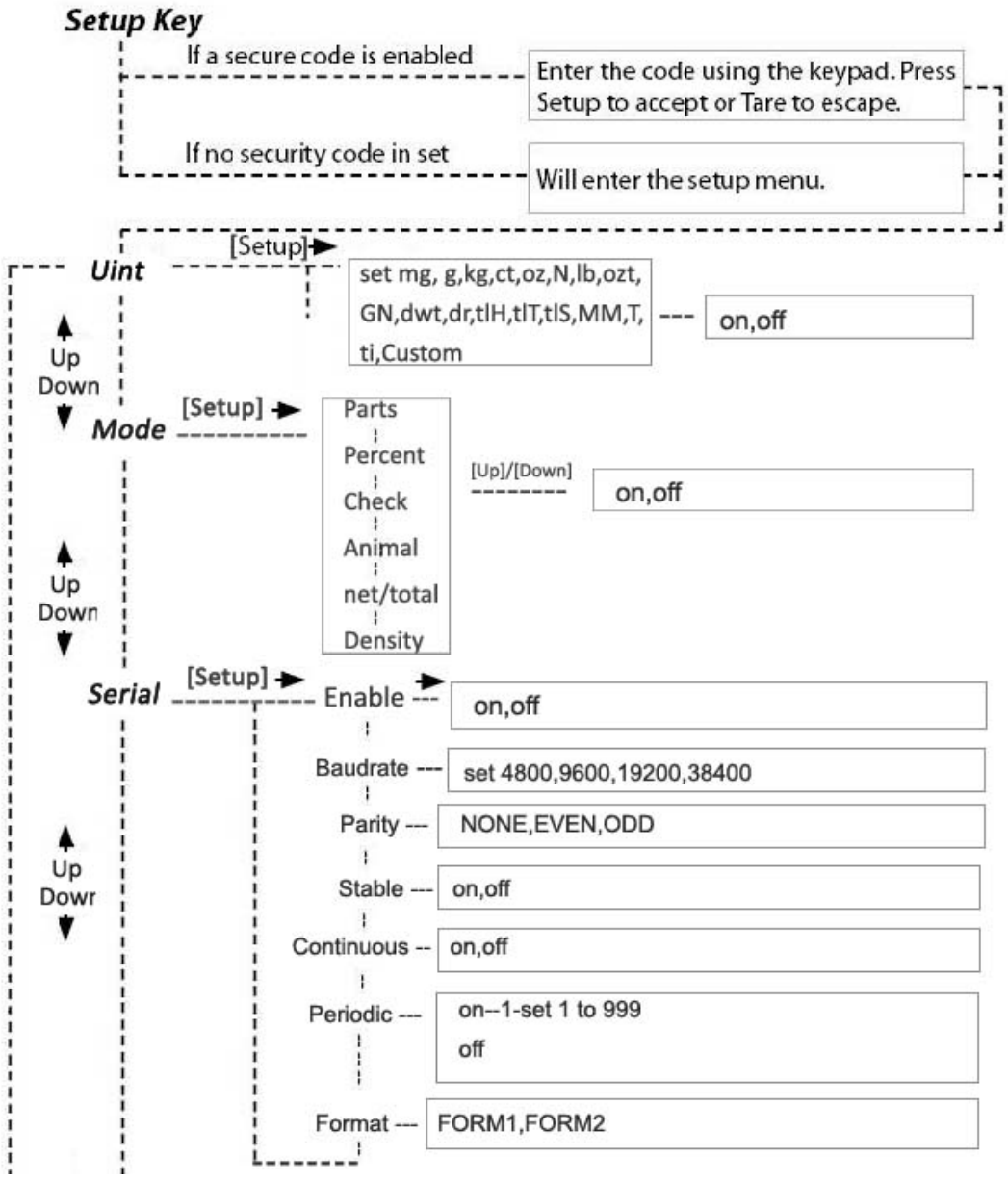
7.0 MENU STRUCTURE

Pressing the **[Setup]** key while in normal weighing gives access to the menus The **[Up]** and **[Down]** keys will cycle through the main menu item, pressing **[Enter]** key enter the sub-menu or options can be set. Press **[Mode]** to come out of a sub-menu or **[Esc]** to return to normal weighing



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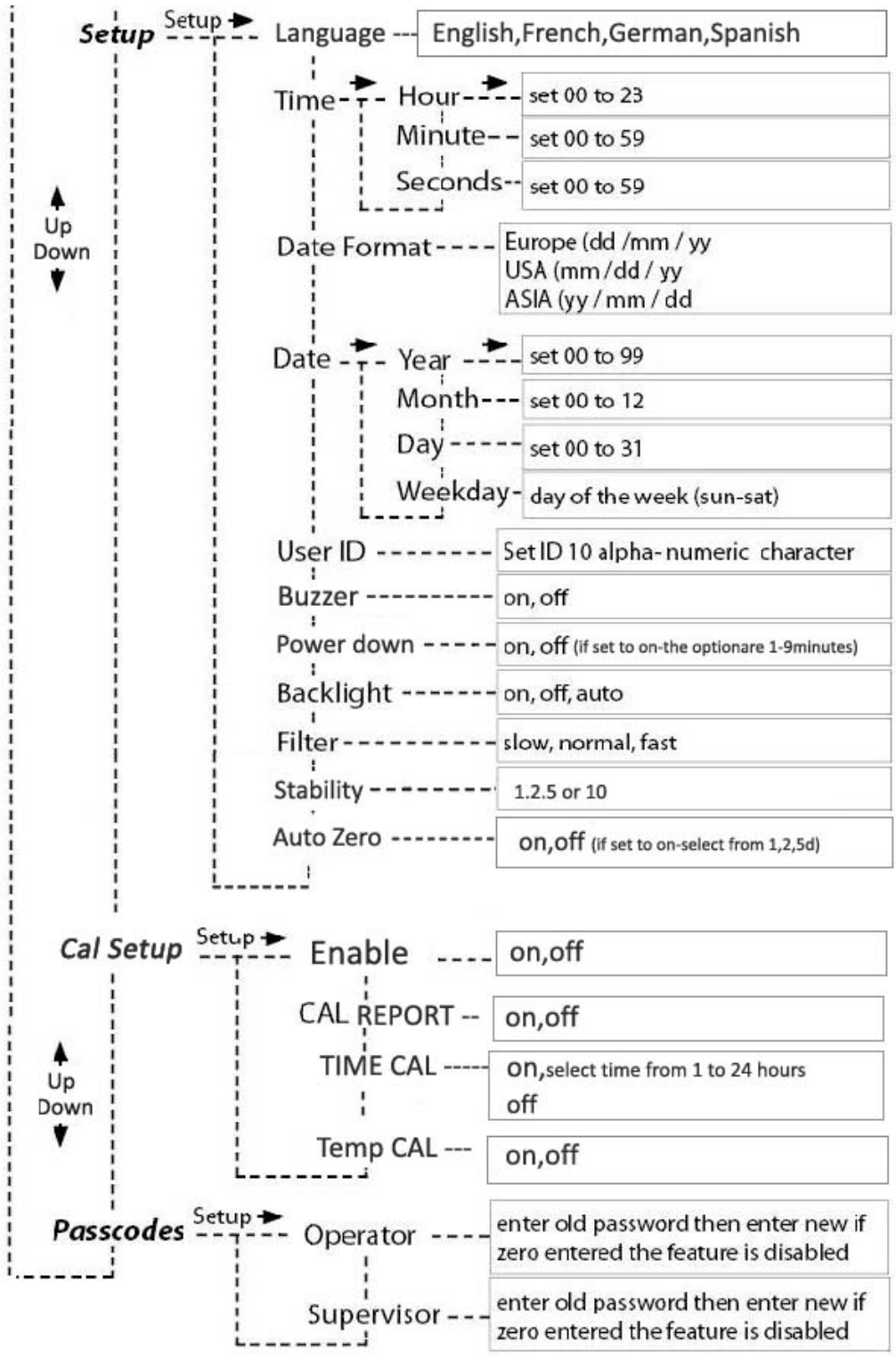

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8.0 TROUBLE-SHOOTING

Service of a balance will generally be necessary when the balance does not perform as expected. The balances are not user-serviceable. For Service Information, see section 9.0 and contact Adam Equipment or your supplier.

BALANCE DOES NOT FUNCTION		
Problems	Possible causes	Suggestions
The balance is dead when power is applied	Power supply failure	Check adapter is working Check adapter is correct for the balance Normal adapter is 15VDC, 800mA. *Power supply circuit board failure *Short circuit on any circuit board
The display does not turn on but the calibration motor moves when power is applied	Power is getting to balance, display is not working	*Display cables may be faulty *Display module failure
The display stays on the initial test screen when power is applied. Calibration weight motor is on.	Unstable balance Balance not working correct Power supply	*Check if balance is stable by using service menu and view A/D values Put draught shield over pan Check power supplies
BALANCE WORKS BUT IS NOT STABLE		
Balance is unstable by a few divisions	Noise or vibration from environment Friction in mechanics	Check the balance is positioned correctly to avoid vibration, wind or air movement, it is on a solid table, It is not near sources of heat or cool air, Check balance with weights if problem occurs when sample is used. Static electricity on the samples can cause drifting and instability. Check the area around the weighing pan for hair, dust, obstructions under the pan, *A complete inspection of the mechanics to look for sources of friction may be needed.
Balance is very unstable and does not weigh correctly	Mechanical problems Balance programming Electronic problems	*A complete inspection of the mechanics to look for sources of friction. *Verify the A/D is also unstable. If the A/D is OK then suspect the programming of the balance. Reset parameters, check temperature compensation, and redo the calibration. Some electronic problems can also cause this. But all mechanical problems must be resolved first.

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BALANCE IS NOT ACCURATE		
You must have accurate and trusted weights to test a balance. If you suspect that the balance is not accurate then you must know your weights are accurate. A balance calibrated using a bag of flour is not accurate even if it works OK otherwise.		
Balance is not accurate	Repeatability Eccentric loading Linearity	Verify the balance shows the same value when the same mass is placed on the centre of the pan for a few tests. Verify the balance shows the same reading (within a tolerance depending upon the model) when a mass is placed at positions around the pan. Verify the balance is acceptable throughout the weighing range. The balance must give acceptable readings from low weights up to the capacity.
Poor Repeatability	Usually a mechanical problem.	Inspect the area around the pan for hair, dust or other obstructions, *Inspection of the mechanics may be needed for any possible problems.
Poor Eccentric loading	A mechanical problem	Inspect the area around the pan for hair, dust or other obstructions, *Inspection of the mechanics may be needed for any possible problems. *Readjusting of the Eccentric loading is recommended.
Poor Linearity	Usually a mechanical problem Electronic Problems	Re-check repeatability *Inspection of the flexures for damage or loose hardware may be required *Use the Linearity Function in the service menu to reset linearity *A problem in the analogue circuit board or power supplies can cause poor linearity. Make sure all mechanical problems have been eliminated first

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OTHER PROBLEMS		
Cannot calibrate	Zero shifted more than allowed Calibration timeout	*Check all flexures for damage *Reset factory calibration *Verify linearity and repeatability *The balance may be unstable. Verify stability as above. Try using a more aggressive filter
Calibration weight motor does not stop		*Check the cables to the motor, try plugging the balance into the power again *Look for friction in the calibration weight movement *Check the opto-coupler that controls the motor position.
RS-232 not working	Doesn't print	Check parameters match the device connected Verify cable is correct *RS-232 circuits damaged
Display dark, keys beep	Display contrast poor Cable unplugged or damaged	*Check the cables to the display *Replace the display which could be damaged

*To be carried out by authorised technicians only.

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ADAM

Adam Equipment

ADAM EQUIPMENT, BOND AVENUE, DENBIGH EAST INDUSTRIAL ESTATE, MILTON KEYNES, MK1 1SW, U.K.

CE

Declaration of Conformity	Verklaring van overeenstemming
Konformitätserklärung	Dichiarazione di Conformità
Déclaration de Conformité	Declaración de Conformidad

The non-automatic weighing instrument
Die nicht- automatischen Wägeapparate
L'instrument de pesage à fonctionnement non automatique
Het niet –automatische weegwerktuig
Strumento per pesatura non automatico
Imstrumento para pesaje non automatico

II

Manufacturer :	Adam Equipment Co. Ltd.		Hersteller :	Adam Equipment Co. Ltd.		Fabricant :	Adam Equipment Co. Ltd.
Type:	PGW..M		Typ:	PGW..M		Type:	PGW..M
No of the EC type-approval certificate:	TCM 128/10-4762		Nr. der EG-Bauartzulassung:	TCM 128/10-4762		N° du certificate d'approbation CE de type:	TCM 128/10-4762
Corresponds to the production model described in the EC type-approval certificate and to the requirements of the Council Directive 90/384/EEC as amended and to the requirements of the following EC Directives:			Entspricht dem in der Bescheinigung über die Bauartzulassung beschriebenen Baumuster, sowie den Anforderungen der EG-Richtlinie 90/384/EWG in der jeweils geltenden Fassung und den Anforderungen folgender EG-Richtlinien:			Correspond au modèle décrit dans le certificat d'approbation CE de type, aux exigences de la directive 90/384/CEE modifiée et aux exigences des directives CE suivantes:	
73/23/EEC	Electrical equipment for use within certain voltage limits (Low Voltage Directive)		73/23/EWG	Elektrische Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen (Niederspannungsrichtlinie)		73/23/CEE	Matériel électrique pour utilisation dans des limites de tension définies (Directive Basse Tension)
89/336/EEC	Electromagnetic compatibility		89/336/EWG	Elektromagnetische Verträglichkeit		89/336/CEE	Compatibilité électromagnétique
This declaration is only valid when accompanied by a Certificate of Conformity issued by a Notified Body.			Diese Erklärung gilt nur in Verbindung mit einer Konformitätsbescheinigung einer benannten Stelle			Cette déclaration est seulement valide quand elle est accompagnée par une Attestation de Conformité délivrée par un Organisme Notifié.	

Fabrikant :	Adam Equipment Co. Ltd.		Produttore	Adam Equipment Co. Ltd.		Fabricante	Adam Equipment Co. Ltd.
Type:	PGW..M		Modello:	PGW..M		Tipo:	PGW..M
Nummer van de Verklarling van EG-typegoedkeuring	TCM 128/10-4762		N. di certificato di approvazione di tipo CE	TCM 128/10-4762		Numaro del certificado de aprobacion de tipo CE:	TCM 128/10-4762
Conform met het model beschreven in de verklaring van EG-typegoedkeuring en met de voorschriften van EG richtlijn 90/384/EEC zoals gewijzigd en met de volgende EG richtlijnen:			Conforme al modello di produzione descritto nel certificato di approvazione de tipo CE e secondo le richieste CE direttivo 90/384/CEE come modificato e secondo le rechieste della seguente directive CE			Conforme al modello di producion descrito nel certificado di aprobacion del tipo CE e segun los requisitos del CE diretiva 90/384/CEE como modificato e segun los requisitos della siguiente diretive CE	
73/23/EEC	Laagspanning richtlijn		73/23/EWG	Strumenti elettrici per uso entro certi limiti di voltaggio (Directivo di voltaggio basso)		73/23/CEE	Instrumentos electricos para uso dentro cierti limites del voltaje (Diretivo di voltaje bajo)
89/336/EEC	EMC richtlijn		89/336/EWG	Compatibilita electromagnetico		89/336/CEE	Compatibilidad electromagnetico
Deze verklaring is alleen geldig samen met een certificaat van overeenstemming afgegeven door een bevoegde instantie.			Questa dichiarazione e valida solamente se accompagniato da un certificato di conformita relaciato da un ente riconosciuto.			Esta declaracion es valida solamente si accompagniato a un certificado da conformidad emitida par un organismo notificado.	

Signature Unterschrift Signature Handtekening Firma Firma	J.S. Cumbach Technical Manager	Date Datum Date Datum Date Fache	3 September 2010

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9.0 SERVICE INFORMATION

This manual covers the details of operation. If you have a problem with the balance that is not directly addressed by this manual then contact your supplier for assistance. In order to provide further assistance, the supplier will need the following information which should be kept ready:

A. Details of your company

-Name of your company:
-Contact person's name:
-Contact telephone, e-mail,
fax or any other methods:

B. Details of the unit purchased

(This part of information should always be available for any future correspondence. We suggest you to fill in this form as soon as the unit is received and keep a print-out in your record for ready reference.)

Model name of the balance:	
Serial number of the unit:	
Software revision number (Displayed when power is first turned on):	
Date of Purchase:	
Name of the supplier and place:	

C. Brief description of the problem

Include any recent history of the unit. For example:

-Has it been working since it's delivered
-Has it been in contact with water
-Damaged from a fire
-Electrical Storms in the area
-Dropped on the floor, etc.

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WARRANTY INFORMATION

Adam Equipment offers Limited Warranty (Parts and Labour) for the components that fail due to defects in materials or workmanship. Warranty starts from the date of delivery.

During the warranty period, should any repairs be necessary, the purchaser must inform its supplier or Adam Equipment Company. The company or its authorised Technician reserves the right to repair or replace the components at the purchaser's site or any of its workshops depending on the severity of the problems at no additional cost. However, any freight involved in sending the faulty units or parts to the service centre will be borne by the purchaser.

The warranty will cease to operate if the equipment is not returned in the original packaging and with correct documentation for a claim to be processed. All claims are at the sole discretion of Adam Equipment.

This warranty does not cover equipment where defects or poor performance is due to misuse, accidental damage, exposure to radioactive or corrosive materials, negligence, faulty installation, unauthorised modifications or attempted repair or failure to observe the requirements and recommendations as given in this User Manual.

Repairs carried out under the warranty does not extend the warranty period. Components removed during the warranty repairs become the company property.

The statutory right of the purchaser is not affected by this warranty. The terms of this warranty is governed by the UK law. For complete details on Warranty Information, see the terms and conditions of sale available on our web-site.

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CE

Manufacturer's Declaration of Conformity

This product has been manufactured in accordance with the harmonised European standards, following the provisions of the below stated directives:

Electro Magnetic Compatibility Directive 2004/108/EC

Low Voltage Directive 2006/95/EC

Adam Equipment Co. Ltd.
Maidstone Road, Kingston,
Milton Keynes, MK10 0BD
United Kingdom

FCC COMPLIANCE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. The equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

Shielded interconnect cables must be employed with this equipment to insure compliance with the pertinent RF emission limits governing this device.

Changes or modifications not expressly approved by Adam Equipment could void the user's authority to operate the equipment.

WEEE COMPLIANCE

Any Electrical or Electronic Equipment (EEE) component or assembly of parts intended to be incorporated into EEE devices as defined by European Directive 2002/95/EEC must be recycled or disposed using techniques that do not introduce hazardous substances harmful to our health or the environment as listed in Directive 2002/95/EC or amending legislation. Battery disposal in Landfill Sites is more regulated since July 2002 by regulation 9 of the Landfill (England and Wales) Regulations 2002 and Hazardous Waste Regulations 2005. Battery recycling has become topical and the Waste Electrical and Electronic Equipment (WEEE) Regulations are set to impose targets for recycling.

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ADAM EQUIPMENT is an ISO 9001:2008certified global company with more than 35 years experience in the production and sale of electronic weighing equipment.

Adam products are predominantly designed for the Laboratory, Educational, Medical, retail and Industrial Segments. The product range can be described as follows:

-Analytical and Precision Balances
-Compact and Portable Balances
-High Capacity Balances
-Moisture analysers / balances
-Mechanical Scales
-Counting Scales
-Digital Weighing/Check-weighing Scales
-High performance Platform Scales
-Crane scales
-Medical Scales
-Retail Scales for Price computing

For a complete listing of all Adam products visit our website at
www.adamequipment.com

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The latest version of this publication can be found on our Website.

www.adamequipment.com